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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,756	03/29/2006	Katsumi Uehara	062709-0165	3990
22428	7590	05/04/2007		
FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER GILLAN, RYAN P	
			ART UNIT	PAPER NUMBER
			3746	
			MAIL DATE	DELIVERY MODE
			05/04/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,756	<b>Applicant(s)</b> UEHARA ET AL.	
	<b>Examiner</b> Ryan P. Gillan	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,5-7 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1, 2, 5-7 and 9-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/29/2006</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "no gap in the valve structure except for the opposing part." It is unclear how a part of the apparatus can be considered a gap. For the purposes of examination it is assumed that there is --no gap except between the valve structure and the opposing part--.
2. Claim 2 recites the limitation "suction main body" in line 4 of claim 2. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination it is assumed that "suction main body" actually refers to the --suction valve main body--.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (6,318,980) in view of Fraser (6,309,194). Kurihara teaches a cylinder block (surrounding the piston 46) which has a cylinder bore (surrounding the piston 46) to

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accommodate a piston 46; a crank chamber (enclosed by housing 27) which is provided at one end of the cylinder block; a suction chamber 72 and a discharge chamber 70 that are provided at the other end of the cylinder block; a valve (22, 2) that is provided between the cylinder bore and the suction chamber and between the cylinder bore and the discharge chamber; a valve plate 1 provided with the valve and having a suction hole 5 to communicate between the cylinder bore and the suction chamber and a discharge hole 4 to communicate between the cylinder bore and the discharge chamber; a suction valve provided with the valve and assemble to the side of the cylinder bore of the valve plate (clearly seen in figure 1), and the suction valve is comprised of a flexible plate to be able to open and close the suction hole; a drive shaft 34 that is rotatably and axially supported within the crank chamber to reciprocally actuate the piston; and a valve structure in which the suction valve is formed with a suction valve main body (integral with the valve plate), and an opposing part 22 that is integrally formed on the suction valve main body, and faces the suction hole and a valve seat at the opening edge of the suction hole so as to be able to open and close the suction hole.

4. Kurihara teaches all of the claim limitations cited above, but fails to teach the following claim limitations taught by Fraser: a clearance forming means (integral with valve plate 30), which forms a predetermined clearance 60 between the opposing part 20 and the valve seat 30 by isolating the opposing part from the valve seat by a predetermined distance, is formed on the valve plate 30, wherein there is no gap in the valve structure except for between the opposing part and the suction valve main body

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(clearly seen in figure 1); wherein the upper surface of the valve seat is chamfered or rounded (the inner portion of 30); wherein a groove (clearly seen in figure 1 surrounding valve seat 30) formed thinner than the valve seat is provided in periphery of the valve seat so that the groove surrounds the suction hole; and the width of the groove of a one part is bigger (the right side) than the width of other parts of the groove; wherein an outer edge step of the groove and the upper surface of the valve seat is chamfered or rounded (clearly seen in figure 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the suction valve taught by Kurihara by incorporation the clearance means, groove and valve seat structure taught by Fraser as a means of reducing suction valve adhesion to the valve seat and reduce operating stress on the suction valve (col. 4 lines 23-39).

5. Claims 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara and Fraser in view of Fraser (6,309,194). The combination of Kurihara and Fraser teach all of the claim limitations as cited above, but fails to teach the following claim limitations taught by Fraser (6,309,194): the clearance forming means comprises a coating layer 60 having a predetermined thickness coated on the valve plate main body 30 excluding the valve seat at the opening edge of the suction hole and the suction main body (clearly seen in figure 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Kurihara and Fraser by incorporating the clearance forming means taught by Fraser (6,309,194) as a means of facilitating the release of the suction valve from its valve seat earlier in the suction stroke (col. 4 lines 10-14).

6. Claims 5-7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara and Fraser in view of Yoshimura (6,152,703). The combination of Kurihara and Fraser teach all of the claim limitations cited above, but fail to teach the following claim limitations taught by Yoshimura: the clearance forming means comprises a concave portion 345 provided by having a range where at the edge of the suction hole of the valve plate including the valve seat and is formed thinner than the valve plate main body 195. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the clearance forming means taught by Fraser by incorporating the concave portion taught by Yoshimura as a means of controlling the initial deflection amount of the suction valve (col. 74 lines 18-29).

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan P. Gillan whose telephone number is (571) 272-8381. The examiner can normally be reached on M-F 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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